UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/732,506 | 12/06/2000 | Jean-Yves Bouguet | 06618/565001/CIT-3128 | 1153 |

20985 7590 07/28/2005

FISH & RICHARDSON, PC
12390 EL CAMINO REAL
SAN DIEGO, CA 92130-2081

| EXAMINER | |
|---|---|
| CHAWAN, SHEELA C | |
| **ART UNIT** | **PAPER NUMBER** |
| 2625 | |

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/732,506 | BOUGUET ET AL. | |
| | Examiner | Art Unit | |
| | Sheela C. Chawan | 2625 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *25 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1- 64-* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *12- 25, 53-55 and 57-60* is/are allowed.

6)☒ Claim(s) *1-3, 5-9, 11,26, 32, 35, 36, 38- 43, 45- 46, 47, 49- 52, 63-64* is/are rejected.

7)☒ Claim(s) *4,10,27- 31, 33, 34, 37, 44, ,56, 61, 62* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Amendment*

1. Applicant's amendment filed on April 25, 2005 has been entered and made of record.

Claims 7 and 48 are cancelled.

Claims 1- 6, 8- 47, 49 - 64 are pending in the application.

### *Allowable Subject Matter*

2. Claims 12- 25, 53 -60, are allowed.

### *Response to Arguments*

3. Applicant's arguments, see page 18, lines 11- 21 of the remarks, filed on April 25, 2005, with respect to rejection of claims 1-6, 8-47, 49- 52, 54, 56, 57 and 59-64 under 102(e) have been fully considered and are persuasive. The 102(e) rejection of claims 1-6, 8-47, 49- 52, 54, 56, 57 and 59-64 has been withdrawn. However, upon further consideration, a new ground(s) of rejection made in view of Mech et al., (US 6,349,113 B1).

### *Claim Rejections - 35 USC § 101*

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 47 is rejected under 35U.S.C. 101 because the claimed invention 47 is directed to non-statutory subject matter. The terminology "A medium, including instruction in machine readable form" alone has no set definition. The following claim formats are acceptable and not subject to a 101 rejection "A computer program

embodied in a computer readable medium for performing instruction" and or "A computer readable medium storing a program for performing instruction ". See – MPEP 2106.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 5- 6, 8 – 9, 11, 32, 35, 36, 38 - 43, 45-46, 49- 52, 64-64, are rejected under 35 U.S.C. 102(e) as being anticipated by Mech et al., (US 6,349,113 B1).

As to claims 1 and 36, Mech discloses a method, comprising:

moving a shadow (note, cast shadow corresponds to moving shadow, fig 1), across a three-dimensional scene (column 4, lines 23-34);

imaging ( note, camera records and captures the scene of 3D surface of the object using the movement of shadow across the object scene, fig 1 element 140) said moving shadow by determining temporal information about the moving shadow and determining shadow information associated with times within said temporal information (note, detection of cast shadows are within video image sequences which corresponds to temporal or time, are column 1, lines 48- 64); and

determining three-dimensional information about the scene from the shadow information and from the temporal information (column 5, lines 11-23, column 8, lines 4-8 ).

As to claim 36, see the rejection of claim 1 above.

As to claim 2, Mech discloses a method wherein said imaging comprises using a camera to obtain an image of the moving shadow (fig 1, element 1, column 2, lines 41-42).

As to claim 3, Mech discloses a method further comprising determining a transformation between an image plane of the camera and actual plane comprising the three-dimensional scene (column 4, lines 43-67, column 5, lines 27-33).

As per claim 5, Mech discloses a method comprising an initial operation of calibrating a position of a light source (column 2, lines 35-42, column 3, lines 1-30, 38-40).

As to claim 6, Mech discloses a method further comprising an initial operation of calibrated a position of a plane on which the three-dimensional scene is located (column 4, lines 23-34).

As to claim 8, Mech discloses a method further comprising converting said projection into actual shadow information (abstract, column 1, lines 48- 64).

As to claims 9 and 32, Mech discloses a method wherein said calibrating a position of the light source comprises imaging an item of known height by defining a position of its shadow, and triangulating a position of the light source (column 5, lines 40- 67).

As to claims 11, 63 and 64, Mech discloses a method wherein said determining comprises obtaining images of different edges at different locations, and using information about the intersection to form three-dimensional information (column 6, lines 48-64).

Regarding claim 26, argument analogous those presented for claim 1 are applicable to claim 26 as discloses by Mech as follow extracting temporal information from said moving shadow and using said temporal information to determine a plurality of times (column 2, lines 35-45);

obtaining an image of the moving shadow at each of the plurality of times (fig 4, column 6, lines 12- 47);

determining a relationship between the image and the three- dimensional surface at each of the plurality of times (column 1, lines 48- 64); and

converting said image into information indicative of the three-dimensional surface (column 4, lines 23-34).

As to claim 38, Mech discloses an apparatus further comprising a memory, associated with said processor storing information obtained from camera calibration (column 2, lines 43-57).

As to claims 39 and 50, Mech discloses an apparatus wherein said information stored in said memory comprises ground plane information (column 2, lines 43-57).

As to claims 40 and 51, discloses an apparatus wherein said memory also stores information indicative of a length of a device used to produce said moving shadow (column 5, lines 11-23, column 8, lines 4-8).

As to claim 41, Mech discloses an apparatus wherein said memory also stores information about a profile of brightness intensity (column 5, lines 40- 67).

As to claim 42, Mech discloses an apparatus wherein said memory also stores information about a threshold of brightness intensity (column 5, lines 11-23).

As to claim 43, Mech discloses an apparatus wherein said memory stores information about a location of a light source (fig 1, 110 a light source).

As to claims 45 and 52, Mech discloses an apparatus wherein said processor processes only pixels of the image which have intensity values greater than said specified threshold (column 5, lines 11-23).

As to claims 46 and 35, Mech discloses an apparatus wherein said processor uses said information in the memory to transform between an image plane of said

camera and an actual plane comprising the three-dimensional scene (column 2, lines 43-57).

As to claim 49, Mech discloses a method wherein said information includes instruction to automatically determine a position of a light source from the information in said image (column 2, lines 35-42, column 3, lines 1-30, 38-40).

***Allowable Subject Matter***

6. Claims 4, 10, 26- 31, 33 - 34, 37,44, 56, 61-62 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Contact Information***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheela C Chawan whose telephone number is. 571-272-7446. The examiner can normally be reached on Monday - Friday 7.30 - 4.00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sheela Chawan
Patent Examiner
Group Art Unit 2625
July 22, 2005